

A STUDY OF THE RELATION BETWEEN DEGREE OF INDIAN BLOOD
AND SPECIFIC TRIBE AND THE INTELLIGENCE AND
SCHOLASTIC MARKS OF THE AMERICAN
INDIAN

by

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CHAPTER I

INTRODUCTION

A. A STATEMENT OF THE PROBLEM

In recent years various scientific attempts have been made to determine whether the popular notion of race superiority is based upon fact or whether it is based upon prejudice toward a group of people who are different from one's own group.

Certain differences in physical characteristics are very marked and obvious. Whether they are associated with any real difference in mental traits is another question. Many measurements of physical differences have been made and many tests of sensory reactions conducted. Slight differences have been found in sensory responses, such as visual and auditory acuity, motor reaction time, and response to colors, but the investigators hesitate to state that their results indicate any real difference in native ability. The general conclusion seems to be that racial differences in these respects are due to nurture.

In recent years attempts have been made to measure general intelligence. Tests have been made upon Negroes,

Indians, Filipinos, Chinese, Japanese, and various other races. Although slight differences are evident and a definite relation has been found between general intelligence and degree of white blood of the subjects tested, investigators hesitate to state, because of deficiencies in our present testing equipment, that there is undoubtedly a difference in native ability; nor will any investigator venture to estimate the difference in mental ability between any two races, provided there be a difference. Too many factors which cannot be controlled enter into the situation. It may be that language handicap and environment, or nurture, enter into the situation and if controlled would explain the slight differences which show up in experimental studies.

All investigations which have been made indicate the need for further study of the problem and for more accurate measurements of native mental ability.

The purpose of this thesis is to study the performance of the American Indian upon the Terman Group Test of Mental Ability and to determine if possible in the light of this and similar studies whether there is any relation between general intelligence and the degree of white blood found in the various individuals. An attempt is made to study also the relation of school marks to general intelligence and the relation of tribal membership to intelligence.

For this purpose the test scores and scholastic records of 625 Indians of Haskell Institute, Lawrence,

Kansas, were used. Of the 625 Indians, 360 were men and 265 were women. Over 40 tribes were represented, but most of them were represented by so few Indians that an intensive study of tribes was not profitable.

In order to study the effect of degree of Indian blood upon general intelligence, the group was divided into five smaller groups: full-blood, $3/4$ Indian blood, $1/2$ Indian blood, $1/4$ Indian blood, and less than $1/4$ Indian blood. There were only six cases in the fifth group; therefore very little could be done with it, and it will not be considered in any part of this study in which degree of Indian blood is a factor.

The conclusions reached in this study must be interpreted in the light of this particular situation and in comparison with other studies made in the field.

B. HISTORICAL SUMMARY

1. A Survey of Experiments and Literature Bearing on the Problem

In this section the writer shall attempt to review briefly the experimental studies and theoretical discussions of race differences in mental ability and particularly the differences in the mental ability of the American Indian compared to that of the white race.

T. R. Garth is, perhaps, one of the leading authorities on the question of race differences in mental ability. Because of the many studies and experiments he has made and the amount of literature he has written upon the subject, considerable space will be given to a review of his contributions.

We shall consider first his book "Race Psychology".¹ In Chapter I Garth calls attention to the fact that we can measure only quantitative differences between races and that we cannot find qualitative differences in the mental processes of memory and imagination between any two races. Furthermore, he says, we can measure differences only as they stand today, and before we can speak with authority upon the matter of race differences we must take into

1. T. R. Garth. Race Psychology. McGraw-Hill Book Company, New York. 1931

account not only present, but also past and future potentialities. He sees another difficulty in the fact that innate behavior changes with environment, and "native patterns" cannot be found in mature life because they are so modified by experience.

In the same chapter Garth explains the effect of the urge of necessity upon the learning and civilization of a people. He uses for an example the Pueblo cliff dwellers of Mesa Verde of eight hundred years ago, who lived in houses built midway on the sides of precipitous canyon walls. They learned the art of masonry and became expert climbers because they needed to protect themselves from marauding nomadic Indians. On the other hand, the nomadic Indians became good hunters and fishermen because of the necessity of providing food.

Races differ also in their "methods", which Garth defines (p. 17) as a form of general behavior which arises out of numerous particular forms of behavior, all different, yet all similar, a fact which gives rise to the inclusive general behavior. It may be regarded as a sort of higher order of habit having its roots in lower orders of habits. "One race," he says, "may possess a method due to peculiar ways of going about things which another race may not have acquired, but that is not saying it could not. We could never know until the uninitiated race had been given the opportunity to acquire this method."²

Interference of one kind of learning with another, in addition to the urge of necessity before mentioned, Garth continues, is a factor of modification which should be considered in measuring racial differences. It is, for example, often difficult for one who has learned to speak the language of one country to speak a different language in another country. Garth quotes teachers in government Indian schools as saying that the Indian child who is brought to them at the age of five is more easily taught than if he comes to school for the first time at the age of eleven or more.

Other important factors to be considered in the study of the development of the culture of a particular race which Garth mentions are modification of feeling and emotion by education, ideals, and attitudes, and technique of the administrator of the test, for it may be that Negro and Indian children are not so much at ease with white experimenters as white children are.

In his summary of Chapter I Garth invites his reader to study the evidence and to decide for himself whether or not there are racial differences in mental traits, but he says, "...the author is convinced after an examination of the literature that we have never, with all our searching found indisputable evidence for belief in mental differences which are essentially racial. Differences as found can usually be shown to be due to one of the two causes, modification and nurture (or selection), and often these

are complicated by the results of careless measuring."

In Chapter II of "Race Psychology" he discusses a study made by himself and two graduate students in which 609 mixed-blood Indians, 89 full-blood Indians, and 67 whites were tested with the National Intelligence Test. The Indians were tested in Indian schools on Indian reservations in South Dakota, Oklahoma, New Mexico, and Colorado. The whites came from a representative white population. The investigators found a positive correlation of 0.42 between degree of white blood and an approximate I. Q. when grade placement as a factor had been held constant. There was a correlation of 0.45 between degree and school grade when I. Q. was held constant. In trying to determine the influence of degree of white blood upon the National Intelligence Test I. Q. within a school grade, the indication ⁱⁿ was that ~~the~~ 4th and 5th grades the degree of white blood is a stronger factor in determining I. Q. than it is in the last three grades.

In Chapter III Garth mentions several experiments in which various primitive races were compared with whites in tests of audibility, keenness of smell and touch perception, and color matching. The general conclusion of Garth is that the primitive man is neither superior nor inferior to the civilized man in these respects.

In Chapter V Garth reviews a study made by E. C. Rowe, using the Goddard form of the Binet test on 268 Indians in an Indian school and 547 white children of Michigan. School

grades included all from the kindergarten through the eighth grade. Rowe found that 94 per cent of the Indian children were mentally below the whites. Results were given in terms of relative mental age because the I. Q. was not in general use at that time.

In Chapter VI Garth discusses intelligence and eugenics. In a study made of Negroes, Mexicans, and Indians with the National Intelligence Test to learn the effect of schooling upon the intelligence, it was found that the Indians are retarded at fifteen years, though otherwise their curve shows a slow but steady rise with age, even to the ages of eighteen and nineteen. With age held constant the correlation between school placement and test scores was found to be 0.73.

The I. Q. for mixed bloods in both government and public schools is generally higher than for full bloods in either kind of school, Garth says on page 99. "Altogether, the study seems to show that the eugenic effect of the United States Indian schools on both mixed and full blood Indians is decidedly great. Some evidence for this belief is found when we examine coefficients of correlation between grade and score for the respective groups. When age is held constant, school-grade placement seems to operate more powerfully to raise the score in the case of the student in the United States Indian schools than it does in the case of any of the public-school groups. Though the Indians in the government schools, who gener-

ally came from reservations, had farther to go in intelligence test performance when they started than did the Indians who attended the public schools, they, if we may say it, probably had a more active, direct, and stimulating environment, physically and mentally. Consequently they made a greater improvement," he says and concludes that school grade is a stronger factor than age in determining intelligence score.

Garth, Serafini, and Dutton made a study of 1050 full blood Indian children of the plains and southeastern tribes and those of the southwestern plateau tribes including the Pueblo, Navajo, Apache, and other tribes.³ Their conclusions were as follows:

1. The approximate median I. Q. of full blood Indians of the plains and southwestern tribes is 69.

2. There is a constant tendency for I. Q.'s as found to increase with education.

3. The correlation of distributed I. Q.'s and school grade is a small positive one (0.25) which may signify selection of Indians with increasing ability to pass the test with education.

4. The mental ages of these Indians and whites in the United States grade for grade stands in a ratio of 100-114, the whites being 14 per cent better than the Indians.

3. T. R. Garth, T. J. Serafini, and Dewey Dutton. "Intelligence of Full Blood Indians." Journal of Applied Psychology, 9:382-389. 1925

5. The social status of the Indians in a United States Indian school is more nearly that of the average white than that of an Indian not so favored.

6. Because of differences in social status and temperament we cannot conclude that our results are true and final measures of the intelligence of Indian children.

Schuelke and Abell assisted Garth in a study in which the subjects varied from $1/16$ to $7/8$ degrees of Indian blood. The subjects were taken from United States Indian schools. Several important conclusions appear in the summary of the report. They are as follows:

1. The results of the study support the belief that intelligence as measured is not peculiar to any special race, but is a variable factor in all races. There are no racial types.

2. Although degree of white blood tends to improve intelligence, being positively correlated with it (0.42), it is no guarantee of intelligence for the coefficient of correlation is not very high.

3. The I. Q. of $3/4$ bloods is 74.1; of $1/2$ bloods it is 75.3, and of $1/4$ bloods it is 77.5. However, these measures are rather high in variability.

4. Intelligence as measured by the National Intelligence Test is influenced more by degree of white blood than by school education, which has only a slight effect.

4. T. R. Garth, Nathan Schuelke, and Wendell Abell. "The Intelligence of Mixed Blood Indians." Journal of Applied Psychology, 11:268-275. 1927

5. The degree of white blood is more influential in lower school grades than in the higher ones, reaching the highest influence in the fifth grade. In the sixth, seventh, and eighth grades it tends to be a constant factor but not a very strong one.

In one study, Garth compares mixed bloods of certain heredity with nomadic and sedentary full blood Indians according to intelligence as indicated by the National Intelligence Test, Scale A, ranking them as follows:⁵

- I Mixed bloods
- II Mexicans
- III Plains and southeastern full-bloods
- IV Plateau Indians, full-bloods
- V Navajo and Apache, full-bloods

Garrett and Garth compared the intelligence of Indians in the United States Indian schools with the intelligence of Indian and white children of the public schools.⁶ They used Scale A, Form 1, of the National Intelligence Test with 587 white children from public schools and Indian children from various public schools and United States Indian Schools. They found that the average score of the full bloods in the Indian schools begins lower and rises higher and more steadily than that of the full bloods in the public

5. T. R. Garth. Intelligence of Indians. Science, 56:635-636. December, 1922.

6. T. R. Garth and J. E. Garrett. A Comparative Study of the Intelligence of Indians in U. S. Indian Schools and in the Public or Common Schools. School and Society, 27:178-184. 1928.

school and that the same is true of the mixed bloods. They found also that I. Q.'s of mixed bloods of both public and Indian schools are higher than the I. Q.'s of full bloods in the corresponding schools.

After comparing the backgrounds of young children of various races Garth says, "When comparisons of mental performances of two races or even of social groups are made, one must consider the environmental influence as a very important factor to be controlled."⁷ The conclusions of this study are as follows:

1. Mixed bloods excell full-bloods by about 11 per cent in performing tests of higher mental processes.
2. Increased education produces an increase in score in the tests for both blood groups.
3. The average score of mixed bloods is always above that of full bloods, excepting in a single instance which may be attributed to practice showing up in the latter group.
4. The easiest tests for the full bloods in terms of mixed blood performance were tests of inventiveness and of immediate memory, the concrete variety being slightly easier than the abstract.
5. Probably on account of language difficulty the logical memory test proved the most difficult test for the full-bloods.

7. T. R. Garth. A Comparison of Mental Abilities of Mixed and Full Blood Indians on a Basis of Education. Psychological Review, 29:221-236. 1922.

6. The other tests found particularly difficult for them were those of controlled association.

7. The best scores were about equally divided between the mixed and full blood Indians.

Woodworth says, in discussing studies of racial differences in the senses made by others at various times and by himself at the St. Louis Fair of 1904, "On the whole, the keenness of the senses seems to be about on a par in the various races of mankind. Differences exist among the members of any race, and it is not improbable that differences exist between the averages of certain groups, especially when these are small, isolated and inbred."⁸ He says also that "We are probably justified in inferring from the results cited that the sensory and motor processes, and the elementary brain activities, though differing in degree from one individual to another, are about the same from one race to another."⁹

Miss Florence L. Goodenough, in speaking of the results of intelligence tests administered to immigrants from various foreign countries, says,¹⁰ "Two theories have been offered to account for these differences. The first ascribes the inferior showing made by the South Europeans and the Negroes

8. R. S. Woodworth. Racial Differences in Mental Traits. Science, 31:171-186. 1900.

9. Ibid. pp. 171-186.

10. Florence L. Goodenough. Racial Differences in the Intelligence of School Children. Jr. of Exp. Psych., 9:388-397. 1926.

to such post-natal factors as inferior environment, poor physical condition and linguistic handicaps. The second point of view, while it recognizes that the factors named may to some degree affect the test results, nevertheless holds that it is impossible to account for all the facts which have been observed upon any other hypothesis than that of innate differences among the groups under consideration."

"It is unquestionably true that the home surroundings of certain racial groups, notably the Italians and Negroes, are, as a rule, far less favorable than those of average American children. Not only is this true of the foreign born Italians, but their American-born descendants frequently continue to live in the same neighborhoods and with little or no improvement in social or hygienic conditions. In this respect a notable difference may be observed between the Italian and the Jew. Both find a home in the slum on first coming to this country: but while the Italian remains there, the Jew soon moves to a better neighborhood.

"'Social pressure' or 'race prejudice' is often urged as a reason for the segregation of certain racial groups within the poorer neighborhoods. In this connection it should be remembered that while racial prejudice may bring about segregation, the character of the neighborhoods thus set off is primarily dependent upon the people living within them."¹¹

11. Florence L. Goodenough. Racial Differences in the Intelligence of School Children. Jr. of Exp. Psych., 9:388-397. 1926.

"It seems probable, upon the whole, that the inferior environment is an effect as much as it is a cause of inferior ability, as the latter is indicated by intelligence tests. The person of low intelligence tends to gravitate to those neighborhoods where the economic requirement is minimal; and, once there, along the line of least resistance. His children inherit his mental characteristics.

"The question of a possible handicap in language as a cause of low scores on intelligence tests is, however, more serious."¹²

Here Miss Goodenough refers to studies made by Berry, Brown, Jordan, Darsie, and others who, she says, "...have shown that children from foreign homes rank, on the average, somewhat lower in tests requiring the use of English than they rank on non-language scales. On the other hand, the use of a non-language scale does not result in equal ratings for the various nationality groups. The Italian continues to rank low even on the non-verbal tests; while the average Japanese child who has had three or four years training in American schools makes a good showing, despite the handicap of language on such a test as the Stanford Binet."¹³

In her own study of racial differences Miss Goodenough used the Goodenough intelligence test for young children,

12. Florence L. Goodenough. Racial Differences in the Intelligence of School Children. Jr. of Exp. Psych., 9:388-397. 1926

13. Ibid.

which is based upon drawings of the human figure, and is completely independent of language. Using the test upon various racial groups found in American schools, she obtained the following results:

I. Q.'s of American children range from 50 to 100			
Median	100.3		
Mean	101.5	500 cases	
S. D.	18.3		
Coeff. of Var.	18.0		

I. Q.'s of Hoopa Valley Indians of California range from 50 to 120.

Median	85.6	
Mean	85.6	79 cases
S. D.	14.1	
Coeff. of Var.	16.5	

Fitzgerald made a study of 83 Indians, to whom he gave the Terman, the Otis, and the National Intelligence tests.¹⁵ The median for the group was 87.5; the range was from 73 to 111. Forty per cent of the Indians tested scored an I. Q. which is considered average for whites. The results gave a slight indication that intelligence may vary inversely with increase of Indian blood. The following table illustrates this indication:

Blood	0-20%	21-40%	41-60%	61-80%	81-100%
Cases	3.	15.	19.	17.	15.
Median	93.	94.	88.	89.	89.
Arith. Mean	94.7	90.7	87.7	88.4	86.3

14. Florence L. Goodenough. Racial Differences in the Intelligence of School Children. Jr. of Exp. Psych., 9:388-397. 1926

15. J. A. Fitzgerald and W. W. Ludeman. The Intelligence of Indian Children. Jr. of Comparative Psych., 6:317-328. 1926.

Fitzgerald studied these results also to determine whether scores were affected by knowledge of language. In the National Intelligence Scale the median, 78, in the symbol digit test was highest. The lowest accomplishment in the Otis scale was shown in the proverb test, the solution of which depends upon a knowledge of and experience in the use of the English language. The highest accomplishment was shown in the memory test.

In the Terman scale the lowest median was made in the "word meaning" test. It is a "same-opposite" test and the solution depends upon knowledge of meaning of words. The best work was done in the classification test which consists of five words in each exercise, one of which is not in the same class as the other four.

The conclusions of Fitzgerald and Ludeman are as follows:

1. The median I. Q. is 87.5. This would seem to show that the Indian child may have a slightly inferior intellect as measured by our intelligence tests when compared to white children.

2. Slight decrease in intelligence as Indian blood increases is found. This decrease may be due to environmental causes.

3. Indians perform better when language is not a vital element.

4. While the evidence is not conclusive, there is some indication that the Indian considers answers to

be logical and correct due to his environment and because of his experience.

5. Nurture, or training, seems to affect the ability to answer certain questions and to solve certain specific tests. Children of ministers and Y. M. C. A. workers were more able to cope with the proverb meaning test than the children of Indians in other vocations.

Pintner uses the following figures in discussing a study made by Hunter of the performance of Indians on the Otis Test to show that with the increase of Indian blood the I. Q. decreases:¹⁶

Blood	1/4	1/2	3/4	4/4
25 percentile	77	68	56	36
Median	109	91	78	67
75 percentile	128	118	108	94

In the discussion of the study we find the following quotation: "A child's abilities are determined by his ancestors, and all that environment can do is to give opportunity for the development of his potentialities."

The same study is reported in a more detailed account¹⁷ by Hunter and Somermier. They made a detailed analysis of 10 individual tests and found that the score decreased

16. R. Pintner. Intelligence Testing. p. 520. Henry Holt & Co. New York. 1923.

17. Eloise Somermier and W. S. Hunter. The Relation of Degree of Indian Blood to Score on the Otis Intelligence Test. Jr. of Comparative Psych., 2:257-277. 1922.

with the decrease of the degree of white blood. In Test One of the Otis Test, 50 per cent of the $1/4$ bloods made a score attained only by the best 25 per cent of the $4/4$ bloods. The 25 percentile for the $1/4$ bloods in each test was usually equal to or above the median for the $4/4$ bloods and the $1/4$ median held about the same relation in general to the $4/4$ blood 75 percentile.

Girls were found to be slightly superior to boys in all bloods save the $1/4$. In each sex the median decreases with the decrease in white blood.

Hunter is of the opinion that the Indian social status is inferior to the whites and that possible social status rank decreases with increase of Indian blood. He calls attention to the fact that inferior social status may be the result of low intelligence rather than its partial cause. He says, "We have felt certain in our own minds that no available scale is sufficiently accurate to indicate the fineness of the differences that may exist. The positive results which we have secured would therefore indicate that the differences between the degrees of blood are greater than our tests reveal."

This same study is reported by Miss Somermier in more
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detail. She administered the Otis test to 715 Indians of the Haskell Indian School at Lawrence, Kansas. The opinion is advanced in the thesis that the Indians of Haskell are

18. Eloise Somermier. Racial Differences in General Intelligence with Particular Reference to the American Indian. Master's Thesis, K. U.

above the average for their race because the lower type full-bloods would probably not come to school for the reason that to be admitted an Indian child's parent or guardian must apply to the agent in the reservation, who files an affidavit that the child needs the help of the government, that he is of a certain degree of Indian blood and that he has at least the equivalent schooling of the third grade. He must have also a physician's certificate stating his physical fitness to attend school.

In this study the highest possible score was 230; the Indian scores ranged on a normal curve from 1 to 169, with the median at 82.64. There was a tendency for the scores to group themselves below the 50 per cent mark, 115, of the possible score, and the median fell 32.36 points below that mark.

In speaking of the performance on the various tests with the Otis Test, Miss Somermier says, "The median scores for each test show the same tendency to decrease as the amount of Indian blood increases. In addition, the four bloods vary consistently in the different tests, that is, a test difficult for one blood, or easy for one blood, proves hard or easy as the case may be for the other bloods." She says also, "The test in which the scores are lowest for all bloods is Test 4 (proverbs). Test 10 (memory of story) shows a higher median than any of the rest. This tendency is quite marked and the 4/4 median here is higher than the

1/4 median of any other test. The medians for the various bloods in the other tests show a tendency to group themselves at about the same level on the graph in Fig. IV. The most constant median score is in Test 6 (geometrical figures) where the difference from 1/4 to 4/4 blood is 1.05 points. In Test 9 (filling in missing words in story) lies the greatest difference, 6.21 points from 1/4 to 4/4. From this data, the Indian shows his greatest ability in memory, his poorest in analyzing situations, his most varied ability in linking the parts of a situation together, and his most constant ability in interpreting geometrical relationships."

E. C. Rowe makes the following statement, based upon
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the results of an experiment: "It seems, therefore, that the only satisfactory explanation of their inferiority in terms of the tests is to be found in an inferiority of native ability." He says also that the tests show that the type of education suited to white children is not suited to Indians, that Indians are weaker in tests involving comprehension and definition than in tests of a more purely perceptual or memory nature, and that "Indians are everywhere inferior to the whites."

Helmer studied the language handicap of the Indian
20
children by means of the Stanford-Binet Test. She says,

19. E. C. Rowe. Five Hundred Forty-seven White and Two Hundred Sixty-eight Indian Children Tested by the Binet-Simon Tests. Pedagogical Seminary, 21:454-468. 1914.

20. Velma Helmer. The American Indian and Mental Tests. Master's Thesis, K. U. 1925.

"Indian superiority was shown in some tests of a distinctly verbal type as well as in tests of a semi-verbal nature." But the evidence was not adequate to permit her to say which of the test results were affected by the Indian's language handicap. She thought that part of the Indian's inferiority indicated by the results of certain individual tests of both the Stanford-Binet and the National tests must be attributed to lack of familiarity with situations presented in them. She states that "The Indians showed their greatest superiority over the whites in Test 5, digit symbol, of the National Intelligence Test Scale. This would tend to show that a language difficulty was probably a factor in producing their inferiority to whites in three out of the four verbal tests of the scale."

Riley makes the following statements in his summary of conclusions arrived at from his study of a group of American Indians to whom he gave a number of intelligence and educational tests.²¹ "On the whole it would seem, then, that the Indian displays his greatest ability in memory and the classification of items, his least ability in distinguishing the meanings of words and in reasoning in arithmetic, his least variation of performance in the non-linguistic type of test, and his greatest variation of performance in supplying the missing words in sentences."

"Even though these pupils are presumed to have a lang-

21. R. M. Riley. A Study of the Performance of Some American Indian Students in Selected Intelligence and Educational Tests. Master's Thesis. K. U. 1923.

uage disability, those tests involving the use of language prove to be more satisfactory as measures of mental ability, using the National and Terman tests as indices, than does the non-linguistic type of test."

The Indian pupils here under consideration fall somewhat below the grade norms established for white children in a majority of the subject-matter tests used. They should, however, not be condemned for this fact, but should be commended when they do approach these standards."

"Degree of Indian blood has little or no effect upon the correlation between intelligence test scores and scores in subject-matter tests and other measures used."

"Silent reading ability, as measured by the Burgess reading test does not enter into ability to perform in the National Intelligence Test, the Terman Group Intelligence Test, or the Van Wagenen Thought Scale A to a sufficient extent to invalidate them as tests for pupils presumed to have a slight language disability."

R. M. Bache reports a study of reaction time of various races.²² He found that negroes are quicker than whites and that Indians are quicker than either whites or negroes. However, he explained that the Indian develops consciously the ability to react quickly to stimuli. His idea is that primitive races respond more quickly than intellectual races.

22. R. M. Bache. Reaction Time with Reference to Race. Psychological Review, 2:475-486. 1895.

Bache says the negro is slower than the Indian and advances the idea that the reason may be the infusion of white blood in the veins and the physiological effects of slavery.

R. S. Woodworth, in an article in which he makes a comparison of races, quotes from Gobineau's "The Inequality of Human Races" (1853).²³ Gobineau believes that different races and stocks are naturally unequal in strength and ability and that they are unaffected by environmental conditions. The decline in civilization that appears from time to time in one or another country does not, he says, mean a decline in the strength of certain stock, but the disappearance of that stock through death or dilution with weaker stock.

In direct contrast to Gobineau's ideas we offer the following statement from Boas: "We have found that the unproved assumption of identity of cultural achievement and of mental ability is founded on an error of judgment; that the variations in cultural development can as well be explained by a consideration of the general course of historical events without recourse to the theory of material differences of mental faculty in different races."²⁴

23. R. S. Woodworth. Comparative Psychology of Races. Psychological Bulletin, No. 10:393. 1916.

24. Boas. The Mind of Primitive Man. p.29. Macmillan Company. 1911.

After discussing the influence of environment, heredity, language, and other factors upon races, Boas concluded his book thus: "I hope the discussions contained in these pages have shown that the data of anthropology teach us a greater tolerance of forms of civilization different from our own, and that we should learn to look upon foreign races with greater sympathy, and with the conviction that, as all races have contributed in the past to cultural progress in one way or another, so they will be capable of advancing the interest of mankind, if we are only willing to give them a fair opportunity."

Garth quotes from Woodworth, who said in 1910 that if there are differences in mental traits among races they must be differences in degree and not in quality, for memory will always be memory, perception always perception, in all races.²⁵ In the same article Garth quotes from McDougall, also, who says there can be little doubt that there are "great differences in mental traits of races, and that these are probably persistent for thousands of generations. Garth criticizes writers for stating arbitrarily without experimental proof that the white race is superior to any other race.

Miller holds much the same opinion in this matter as²⁶ does Garth. He says, "Unquestioned superiority of the white race is the honest conviction of the great mass of

25. T. R. Garth. A Review of Racial Psychology. Psychological Bulletin, 22:343-364. 1925.

26. Herbert Adolphus Miller. Races, Nations, and Classes. Ch. XII. J. B. Lippincott Co., Chicago.

those in it. This is not injustice nor immorality, but illusion. The other races have had similar illusions about their superiority. Race prejudice is strangely undiscriminating. The disdain for the Chinese who are not allowed in certain restaurants in California; the saying that 'There is no good Indian but a dead one'; the Englishman in India calling the native a 'dirty beggar',---all express the same attitude as that held by those who fear social equality with the Negro."

Terman offers an opinion regarding the question of the relative intelligence of races,²⁷---"It is interesting to note that M. P. and C. P. (speaking of particular children tested) represent the level of intelligence which is very, very common among Spanish-Indian and Mexican families of the Southwest and also among negroes. Their dullness seems to be racial or at least inherent in the family stocks from which they come. The fact that one meets this type with such extra-ordinary frequency among Indians, Mexicans and negroes suggests quite forcibly that the whole question of racial differences in mental traits will have to be taken up anew and by experimental methods. The writer predicts that when this is done there will be discovered enormously significant racial differences in general intelligence, differences which cannot be wiped out by any scheme of mental culture."

27. L. Terman. Measurement of Intelligence. Houghton Mifflin Co., New York. 1916.

Gault, in speaking of the differences found in mental ability between mixed and full-blood Indians, says,²⁸
"There is always the possibility that the Indian of mixed blood owes a degree of superiority to the social stimuli of one or the other parent dating from earliest infancy; stimuli that from the beginning have induced a level of reactions that otherwise would have been lacking, and have built up personality complexes that are next to original nature as respects substantiality. The social stimuli that are most effective in the long run are undoubtedly those that the infant receives from its mother, for the reason that the child, in its earlier years, is in closer association with the mother than with the father. If the mother be white, therefore, and the father Indian, it is probable that the personality complexes that have their rise in the infancy of the offspring will account for an individual more divergent from the level of the father's race than would occur if the situation as to parentage were reversed."

Ellis' book, which we shall review in part, contains several chapters which pertain to the subject of race differences in mental ability.²⁹ In Chapter II, "Race Differences in Mental Traits", he gives a brief review of research

28. Robert H. Gault. Social Psychology, p. 104. Henry Holt & Co., New York. 1923.

29. Ellis. Psychology of Individual Differences. D. Appleton & Company, New York. 1930

which has been done in regard to race differences. Although the popular attitude is in favor of the inferiority of other races, Boas and Chamberlain have done work which would indicate that popular opinion may be denied. In regard to the controversy Ellis says, "The burden of proof rests on those who maintain race differences. But in the writer's opinion the attempt to maintain equality of races without adequate evidence is no more warranted than the rival view."

On page 280 he says, "There is excellent reason for believing that one skin color, one race, one nationality may include peoples of very diverse mental capacities and characteristics."

On page 282 he says, "On the whole, the evidence of differences in anatomy and physiology is not sufficient in itself to enable us to make any direct deductions as to probable mental differences, unless we accept the difference in the weight of the cerebrum as being a reliable indication of differences in intelligence."

Again we quote from Ellis, "If in the confession of our ignorance of exact quantitative differences in detailed physical characteristics we seem to arrive at no conclusion, there remains an argument of the first importance which may be based on recognized differences. According to prevailing scientific conceptions, mind, no less than body structures and functions, is a product of evolutionary forces. It is associated with body structures and functions and is inherited in the same way. If, then,

the bodies of different races have developed, as we know to be the fact, along somewhat different lines, why not also the minds of these same races?....Since marked anatomical differences exist, it appears probable that mental differences also exist."

Another argument which Ellis presents is that since a hot climate does not favor great activity, the industrious and active type of individual would not survive so well as the more phlegmatic; while in a colder climate greater intelligence in the making of clothes and shelter is necessary and the low-grade individuals would tend to be eliminated.

On page 284 Ellis continues his argument for differences in intelligence of races. "Until recently," he says, "the brown races have been little influenced by contact with other races. The black races have been in contact for a longer time, but in neither case has the race developed any considerable degree of civilization of its own nor profited any more than necessity required when brought into contact with the civilization of the white man. "If a tree is to be judged by its fruit, if the intelligence of a race bears any relation to its accomplishment--even with the most liberal allowances for circumstances-- it seems difficult to draw any conclusion other than that the black and brown races are inferior to the white race," says Ellis.

In Chapter VIII, "Effect of Environment," Ellis says that environment would not explain differences in intelligence. He says that environment molds but it does not create. Intelligence enables man to change his environment to fit his needs and desires, and the environment into which a child is born is an indication of the intelligence he inherits. To illustrate this point, Ellis, on page 289, reminds us that although Indians have often done good college work, the full-blooded Indian does not show interest in advanced work. This lack of interest, Ellis thinks, is caused by differences in emotional make-up and in environmental pressure.

He mentions several facts which should be considered in judging the intelligence of a race. He says that the results of mental tests cannot be accepted as strictly accurate because they have been obtained under varying conditions and that different tests have been used. Another difficulty is that when races are classified by color we must remember that each race is composed of sub-groups of different mental capacities. Therefore, we should not generalize on the average mental level of a race until we are informed as to the variations within the race. Speaking particularly of the Indian he says, "Studies of several tribes of North American Indians have been made. The general result of these studies shows that the Indians are less intelligent than the whites and that in those of mixed blood there is a relatively high correlation between

the amount of white blood and intelligence. Some of the Indians are less susceptible to fatigue than are the whites. A definite statement of the amount of differences between the average white and the average Indian cannot safely be made."

Ellis then quotes from Garth, who reviewed recent recent literature on race differences: "These studies taken all together seem to indicate the mental superiority of the white race. There may be some question, however, about the indicated intellectual inferiority of the yellow races. Altogether, it may be said that the investigators recognize that these experimental results are crude and so must be taken tentatively. Nevertheless they and similar studies have real value, since they are the beginnings of the application of scientific method to the problem of racial psychology."

2. Summary of Conclusions from Literature.

1. Mental differences between the Indian and white races are quantitative rather than qualitative in the opinion of many, but there is a possibility that many students who readily accept physical differences are straining their interpretation of data regarding mental differences, due to a popular fashion of thinking in regard to such differences.

2. Environment, background, and lack of familiarity with the testing situation may prevent an accurate test of the Indian child's intelligence.

3. More accurate measures of intelligence are needed. (Hunter thinks such measures might reveal greater differences than tests now indicate.)

4. Garth believes primitive man neither superior nor inferior to civilized man in audibility, in keenness of smell and touch perception, and in color matching.

5. Intelligence scores of Indian children tend to rise with the degree of white blood.

6. There is a tendency for I. Q. to increase with education.

7. Tests requiring knowledge of and experience in using language are most difficult for Indians.

8. Indians ranked lower than whites on Goodenough non-language test. (It may be, as Miss Goodenough suggests, that poor environment is the result rather than the cause of low intelligence.)

9. If, as Miss Somermier suggests, the Indians in government schools are above the average for their race, there is a possibility that the difference in intelligence between white and Indian races may be greater than tests indicate.

10. Until we have more accurate measures of intelligence and until we can more nearly control all factors of the testing situation we can make no positive statement regarding the intelligence of the average Indian. We can say only that on a particular test the indication is that the average I. Q. of the whites is so much more or less than the average I. Q. of the Indians.

CHAPTER II

PLAN OF THE INVESTIGATION

A. The Terman Test.

The Terman Group Test of Mental Ability, Form A, was given to the students of Haskell Institute, Lawrence, Kansas, by Mary Macfarlane Dobson in the school year 1932-33 and the tests were scored under her supervision. Through the courtesy of Miss Dobson and the administration of Haskell Institute, the writer was allowed to use the results of the test in the preparation of this paper.

The Terman Group Test of Mental Ability is designed to test or measure general intelligence. It is divided into ten parts, or tests. The total score of the entire test is used in computing the M. A. and the I. Q. of the individual. From the separate tests the examiner can learn whether the individual is particularly strong or weak in information, analogy, interpreting sentence meaning, or in arithmetic, or whether he is above or below the average of his group in a particular phase of mental activity.

In this study, the total scores made on the test

were used to find the I. Q.'s of the individuals and to compare the several groups (divided according to degree of Indian blood) in regard to general intelligence. The blood groups were compared also in regard to scores made on the separate tests of the Terman Test. The total scores were used again in comparing the performance of Indian students with that of white students of the same grade. The norms for this comparison were obtained from Terman's³⁰ "Manual of Directions."

A description of the test follows:

The Terman Test is divided into ten separate tests, each of which demands a particular type of reasoning or judgment. The tests are scored separately and the scores added together to find the total score. The possible total score is 220. A brief description of each test is given below:

TEST 1 INFORMATION

Draw a line under the ONE word that makes the sentence true, as shown in the sample.

SAMPLE Our first President was
Adams Jefferson Lincoln Washington

Possible score 20

30. L. Terman. Manual of Directions. P. 9 World Book Company, Yonkers-on-Hudson, New York. 1926.

TEST 2. BEST ANSWER

Read each question or statement and make a cross before the BEST answer, as shown in the sample.

Why do we buy clocks? Because

SAMPLE 1. We like to hear them strike.
 2. They have hands.
 x 3. They tell us the time.

Possible score 22

TEST 3. WORD MEANING

When two words mean the SAME, draw a line under "SAME". When they mean the OPPOSITE, draw a line under "OPPOSITE."

SAMPLE	fall--drop	<u>same--opposite</u>
	north--south	same--opposite

Possible score 30

TEST 4. LOGICAL SELECTION

In each sentence draw a line under the TWO words that tell what the thing ALWAYS has. Underline TWO, and ONLY TWO, in each line.

SAMPLE A man always has
 body cap gloves mouth money

Possible score 20

TEST 5. ARITHMETIC

Find the answers as quickly as you can.

Write the answers on the dotted lines.

Use the bottom of the page to figure on.

1. How many hours will it take a person to go 66 miles at the rate of 6 miles an hour?

Answer.....

Possible score 24

TEST 6. SENTENCE MEANING

Draw a line under the right answer, as shown in the samples.

SAMPLE Is coal obtained from mines? Yes No
 Are all men six feet tall? Yes No

Possible score 24

TEST 7. ANALOGIES

SAMPLE Ear is to hear as eye is to
 table see hand play
Hat is to head as shoe is to
 arm coat foot leg

Do them all like samples.

Possible score 20

TEST 8. MIXED SENTENCES

The words in each sentence below are mixed up.

If what a sentence means is TRUE, draw a line under "TRUE". If what it means is FALSE, draw a line under "FALSE."

hear are with to ears true false
SAMPLE eat gunpowder to good is true false

Possible score 18

TEST 9. CLASSIFICATION

1. bullet cannon gun sword pencil
SAMPLES 2. Canada ~~Chicago~~ China India France

In each line cross out the word that does not belong there. Cross out JUST ONE WORD in each line.

Possible score 18

TEST 10. NUMBER SERIES

5 10 15 20 25 .30 .35
SAMPLES 20 18 16 14 12 .10 .8.

In each row try to find out how the numbers are made up, then on the two dotted lines write the TWO numbers that should come next.

Possible score 24

B. Degree of Indian Blood

From the records of Haskell Institute the degree of Indian blood of each student was obtained. All Indians of $\frac{3}{4}$ and from $\frac{3}{4}$ up to and including $\frac{15}{16}$ degrees of Indian blood were placed in the $\frac{3}{4}$ Indian blood group. All Indians of $\frac{1}{2}$ and from $\frac{1}{2}$ up to and including $\frac{11}{16}$ degrees of Indian blood were placed in the $\frac{1}{2}$ Indian blood group. All Indians of $\frac{1}{4}$ and from $\frac{1}{4}$ up to and including $\frac{7}{16}$ degrees of Indian blood were placed in the $\frac{1}{4}$ Indian blood group. All Indians of less than $\frac{1}{4}$ Indian blood were placed in the "less than $\frac{1}{4}$ degrees of Indian blood group."

C. Tribe

Over forty Indian tribes were represented by these 625 students studied in the preparation of this paper. However, only nine tribes were numerous enough that they could be included in a study of tribes, which was an attempt to discover whether any tribe or tribes were outstanding in general intelligence.

D. Scholastic Marks.

A complete record of each student's academic work was obtained from the records of Haskell Institute. On

these records some grades were given in letters and some in numbers. Because most of the grades were given in letters, the numbers were translated into letters on the following scale:

93 to 100	-----	considered equal to	A
85 to 92	-----	B
78 to 84	-----	C
70 to 77	-----	D
Below 70	-----	F

In order to average the grades of the several subjects studied by each student, the letters were given the following numerical values:

A-----7

B-----5

C-----3

D-----2

F-----1

Subjects were divided into the following groups:

English	English public speaking dramatics
Mathematics	algebra geometry business arithmetic
Social Science	history sociology economics civics citizenship

Science	general science
	agriculture
	physics
	botany
	biology
Commerce	chemistry
	bookkeeping
	typing
	shorthand

Physical education, home economics, and manual arts were not considered in this study.

An average mark was found for each of these groups of subjects; then by using the average marks an average scholastic mark was found for each student.

CHAPTER III

RESULTS

A. Mental Ability by Degree of Indian Blood.

In this chapter the results of the investigation will be presented and discussed. Any tables dealing with degree of Indian blood will not include any cases of less than $1/4$ degree Indian blood because there are only six cases in this group and such data would not be significant.

TABLE I

CHRONOLOGICAL AGES BY DEGREES OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
Oldest	25.5 yrs.	23.5 yrs.	24.5 yrs.	23.5 yrs.
Median Age	18.9 "	18.7 "	18.6 "	18.5 "
Youngest	14. "	14. "	13.5 "	13. "
Number	169	125	144	181

Table I shows the range and median age found in each of the four groups of Indian blood. From the table it may be seen that the median age varies from 18.5 years in the $1/4$ group to 18.9 years in the $4/4$ group, a difference of only .4 years. We may conclude, therefore, that the chron-

ological age of the subjects of this study can have no measurable effect upon the results of the intelligence test in so far as differences apparently due to degree of Indian blood are concerned.

TABLE 2

MENTAL AGE IN MONTHS BY DEGREES OF INDIAN BLOOD

Group	$\frac{4}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$
High	216	210	210	216
Median	166	168.8	176.8	182.1
Low	120	138	138	132
Number	169	125	144	181

Table 2 shows the range and median M. A. in months of each blood group. The median M. A. of the $\frac{4}{4}$ Indian blood group is 166 months; that of the $\frac{1}{4}$ Indian blood group is 182.1 months, an increase of 16.1 months. These scores indicate, therefore, that there is a tendency for M. A. to increase as degree of Indian blood decreases, or to decrease as degree of Indian blood increases.

We notice also that the range of the $\frac{4}{4}$ Indian blood group is larger and that there are more low scores in this group. The highest M. A., however, is the same for both the $\frac{4}{4}$ and the $\frac{1}{4}$ groups, 216.

The ranges of the $\frac{3}{4}$ and $\frac{1}{2}$ Indian blood groups is less than that of either of the other groups. The highest

M. A. in each of these groups is 210, six months less than 216, the M. A. of the other two groups. The lowest M. A. of the $3/4$ Indian blood group is 138 months, 18 months higher than the lowest M. A. of the $4/4$ and 6 months higher than the lowest M. A. of the $1/4$ Indian blood group. The M. A. of these two groups, then, runs neither so high nor so low as that of the $4/4$ and $1/4$ Indian blood groups, but there is a tendency for M. A. to decrease with degree of Indian blood, for the median M. A. of the $1/2$ Indian blood group is 176.8, eight months higher than the median M. A. of the $3/4$ Indian blood group.

There is a negative correlation of $-.259 \pm .025$ between Mental Age and degree of Indian blood, showing that there is a slight tendency for Mental Age to decrease as degree of Indian blood increases, or for Mental Age to increase as degree of white blood increases.

TABLE 3

I. Q. BY DEGREES OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	110	110	115	115
Median	87.2	88.1	92.6	96.44
Low	60	70	70	70
Number	169	125	144	181

Table 3 shows the range and median I. Q. of each blood group. The median I. Q. increases from 87.2 in

the 4/4 Indian blood group to 96.44 in the 1/4 Indian blood group. This increase of 9.24 points shows that there is a tendency for I. Q. to increase as degree of Indian blood decreases.

The lowest I. Q., 60, is found in the 4/4 Indian blood group. Three cases in this group made scores below 70, the low mark of the other three groups. Five in the 3/4, four in the 1/2, and one in the 1/4 Indian blood group had I. Q.'s of 70.

Three of the 4/4 Indian blood group and one of the 3/4 Indian blood group reached the 110 mark. One of the 1/2 and two of the 1/4 Indian blood group scored 115. These facts seem to indicate that there is a tendency toward fewer high and more low scores as degree of Indian blood increases.

There is a correlation of $-.276 \pm .025$ between degree of Indian blood and I. Q. This negative correlation indicates a tendency for I. Q. to decrease as degree of Indian blood increases, or to increase as degree of white blood increases.

TABLE 4

MEDIAN I.Q.'S OF INDIANS BY GRADE IN SCHOOL

Grade	IX	X	XI	XII
High	105	110	115	110
Median	89.375	85.6	90.2	92.8
Low	65	60	70	70
Number	44	111	105	128

Table 4 shows the median I. Q.'s by grade in school. With the exception of Grade X, which falls below Grade IX in median score, there is a slight increase of median I. Q. with each grade. The median I. Q. of Grade IX may not be so reliable as the medians of the other three grades because of the smaller population in the grade.

The highest I. Q.'s are found in Grade XI. Two students in this grade have I. Q.'s of 115. The lowest I. Q.'s are found in Grade X. One student in this grade has an I. A. of 60.

From this data it appears that I. Q. may depend to some extent upon length of time spent in school, or it may be due to selection; however the number of cases is not large enough that one can draw any positive conclusions in the matter.

TABLE 5

AVERAGE SCHOLASTIC MARKS BY DEGREES OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4
High	6.5	6.	6.	6.5
Median	2.9	3.1	3.2	3.01
Low	1.	1.	1.	1.
Number	167	124	139	179

Table 5 shows the range and median scholastic mark of each blood group. There is a slight increase of the median as degree of Indian blood decreases with the exception of the 1/4 Indian blood group, which falls slightly below the 1/2 and 3/4 Indian blood groups but is higher than the 4/4 Indian blood group.

The lowest numerical rating given, 1 (which means F), is found in each blood group. There are two cases in the 4/4, three in the 3/4, two in the 1/2, and one in the 1/4 Indian blood group having the average scholastic mark of 1.

No student in the entire group made an average of A, represented numerically by the number 7. However, two cases in the 4/4 and three cases in the 1/4 Indian blood group averaged 6.5; and one case in the 3/4 and three cases in the 1/2 Indian blood group averaged 6. It may be seen, then, that although the 4/4 Indian blood group is represented by scores as high or higher than the highest scores of each of the other groups that there is a larger percentage

of low scores in this group than in the other groups.

There is a slight negative correlation of $-.181 \pm .025$ between degree of Indian blood and school marks, indicating that there is a slight tendency for school marks to increase as degree of Indian blood decreases.

TABLE 6

SCHOLASTIC MARKS BY GRADES IN SCHOOL

Grade	IX	X	XI	XII
High	6.5	6.5	5.5	6.5
Median	3.1	3.29	3.06	3.25
Low	1.	1.5	1.5	1.5
Number	105	111	105	128

Table 6 shows the range and median scholastic marks of the students by grades in school. Two cases in Grade IX made scholastic marks of 1, which stands for F. The lowest mark, or average mark, made by the students in the other three grades is 1.5. This average was made by 7 in Grade X, 4 in Grade XI, and 3 in Grade XII.

One case in Grade IX, one in Grade X, and one in Grade XII reached the scholastic mark of 6.5. Four cases in Grade XI reached 5.5 as the highest scholastic mark for that grade.

These data do not indicate any apparent tendency for length of time spent in school to affect either negatively or positively the average scholastic mark of Indian students.

TABLE 7

TOTAL SCORES ON TERMAN TEST BY DEGREES OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4
High	180	175	175	185
Median	89.8	95.2	107.5	116.77
Low	25	40	40	35
Number	169	125	144	181

Table 7 shows the range and median of the total scores of the Terman Test by blood groups. The median scores show a decided tendency for the total score to increase as degree of Indian blood decreases.

Two scores of the 4/4 Indian blood group are five points higher than the highest score of the 3/4 and 1/2 Indian blood groups, but the lowest score of the 4/4 Indian blood group is fifteen points lower than the lowest score of the 3/4 and the 1/2 degree of Indian blood groups.

Two scores of the 1/4 Indian blood group are five points higher than the highest scores of the 4/4 and ten points higher than the 3/4 and 1/2 degree Indian blood groups. The lowest total score of the 1/4 degree Indian blood group is ten points higher than that of the 4/4 and five points lower than the lowest scores of the 3/4 and 1/2 degree of Indian blood groups. In spite of these exceptions the general tendency is toward more low scores in each blood group as the degree of Indian blood increases.

TABLE 8

MEDIAN TOTAL SCORES OF TERMAN TEST BY GRADE IN SCHOOL

Grade	IX	X	XI	XII
Med. Indian score	84.375	84.25	100.357	107.5
Med. white score	104.	122.	138.	147.

Table 8 shows the median total score of both Indian and white students of grades IX, X, XI, and XII. The median Indian scores were computed from data used in this investigation. The median white scores were obtained from Terman's "Manual of Directions" to the Terman Group Test of Mental Ability.³¹

It may be noticed that in each grade the norms of the white children exceed the median scores of the Indian children. The median of the ninth grade whites is 19.625 points above the median of the ninth grade Indians; the median of the tenth grade whites is 37.75 points above the median of the tenth grade Indians; the median of the eleventh grade whites is 37.64 points above the median of the eleventh grade Indians; the median of the twelfth grade whites is 39.5 points higher than the median of the twelfth grade Indians.

These figures would seem to indicate that white children are superior in mental ability to Indian children of the same grade. At this point let us quote from Terman,³²

31. L. Terman. Manual of Directions, Terman Group Test. p. 9. World Book Co., New York. 1926.

32. Ibid.

who said in regard to the norms used in this comparison, "These norms were revised 15 October, 1922, and are based on over 40,000-scores. About two-thirds of these were from California and the remainder were chiefly from the Middle West. Norms for the country as a whole would probably be slightly lower, and doubtless much lower for the states which have relatively poor schools or a large proportion of relatively inferior population groups. The scores of Negro, Indian, and Mexican children will usually be found far below those of white children of the same grade or age. Considerable differences are found also between schools in good and poor sections of the same city. City schools usually make a better showing than rural or village schools, and in this connection it should be noted that our norms are chiefly from city schools." Although there can be no doubt that as a group the whites make better scores on the Terman Test than do the Indians, some would not attribute the difference entirely to mental ability, for part of it may be due to schooling.

TABLE 9

SCORES OF TEST 1-INFORMATION-BY DEGREES OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4
High	20	20	20	20
Median	11.96	12.8	13.5	13.96
Low	1	2	0	3
Number	169	125	144	181

Table 9 shows the range and median score of each blood group on Test 1, Information, of the Terman Group Test, Form A. The possible score on this test was 20. Two cases in the $4/4$, one in the $3/4$, one in the $1/2$, and three in the $1/4$ degree Indian blood group made a score of 20, the highest possible score.

The lowest scores made in each group were 1 in the $4/4$, 2 in the $3/4$, 0 in the $1/2$, and 3 in the $1/4$ degree Indian blood group. With the exception of the $1/2$ degree of Indian blood group the low score rises as the degree of Indian blood decreases. These figures show that the greater the degree of Indian blood the lower the scores tend to be.

The median scores of these groups rise slightly as the degree of Indian blood decreases. We may conclude, therefore, that there is a slight tendency for success on Test 1 to increase as degree of Indian blood decreases.

TABLE 10

SCORES OF TEST 2-BEST ANSWER-BY DEGREES OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	22	22	22	22
Median	16.35	16.42	18.5	17.8
Low	2	0	0	4
Number	169	125	144	181

Table 10 shows the range and median scores of each blood group on Test 2, Best Answer, of the Terman Test.

The highest possible score is 22. Nineteen cases in the $4/4$, fourteen in the $3/4$, twenty-nine in the $1/2$, and forty-seven in the $1/4$ degree Indian blood group made the highest possible score, 22.

The lowest score in the $4/4$ degree Indian blood group was 2, and was made by one case. One case in the $3/4$ and one in the $1/2$ degree Indian blood group scored 0. The lowest score in the $1/4$ degree Indian blood group was 4; it was made by one case.

The medians in each group except the $1/4$ degree Indian blood group increase as degree of Indian blood decreases. The median of the $1/4$ degree Indian blood group falls below the median of the $1/2$ but is above the medians of the $3/4$ and the $4/4$ degree Indian blood groups.

These data show that success of students on Test 2 of the Terman Test tends slightly to increase as degree of Indian blood decreases. However, the tendency is not consistent throughout the four blood groups.

TABLE 11

SCORES OF TEST 3--WORD MEANING--BY DEGREES OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	30	29	30	30
Median	6.47	6.75	9	10.28
Low	0	0	0	0
Number	169	125	144	181

Table 11 shows the range and median scores of each blood group on Test 3, Word Meaning, of the Terman Test.

The highest possible score is 30.

One case in the 4/4, one in the 1/2, and three in the 1/4 degree Indian blood group made the highest possible score, 30. The highest score made by any case in the 3/4 degree Indian blood group was 29; it was made by only one case.

Thirty-three in the 4/4, twenty-four in the 3/4, eighteen in the 1/2, and twenty-two in the 1/4 degree Indian blood group scored 0.

The median scores show a steady rise from 6.47 in the 4/4 to 10.28 in the 1/4 degree Indian blood group.

These data show a tendency toward more high and fewer low scores as the degree of Indian blood decreases; therefore success on Test 3 tends to increase as the degree of Indian blood decreases.

TABLE 12

SCORES OF TEST 4--LOGICAL SELECTION--BY DEGREES OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4
High	20	20	20	19
Median	8.98	9.1	11.4	11.8
Low	0	0	0	0
Number	169	125	144	181

Table 12 shows the range and median scores of each blood group on Test 4, Logical Selection, of the Terman Test. The highest possible score is 20.

One case in the $4/4$, one in the $3/4$, one in the $1/2$ degree Indian blood group made the highest possible score, 20. None made a score of 20 in the $1/4$ degree Indian blood group, but four made a score of 19.

One in the $4/4$, six in the $3/4$, one in the $1/2$, and four in the $1/4$ degree Indian blood group scored 0.

The medians increase from 8.98 in the $4/4$ to 11.8 in the $1/4$ degree Indian blood group, showing that there is a tendency toward more high and fewer low scores as the degree of Indian blood decreases.

Success on Test 4 of the Terman Test increases slightly as the degree of Indian blood decreases.

TABLE 13

SCORES OF TEST 5--ARITHMETIC--BY DEGREES OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	22	18	22	24
Median	6.17	6.4	6.7	8.5
Low	0	0	0	0
Number	169	125	144	181

Table 13 shows the range and median scores of each blood group on Test 5, Arithmetic, of the Terman Test. The highest possible score is 24.

Of all the students tested only one made the highest possible score, 24; that student was from the $1/4$ degree Indian blood group. Two cases in the $4/4$ and one

in the $1/2$ degree Indian blood group made a high score of 22. The highest score the the $3/4$ degree Indian blood group was 18 and was made by two cases.

Fourteen of the $4/4$, six of the $3/4$, eight of the $1/2$, and fifteen of the $1/4$ degree Indian blood group scored 0.

The medians show a slight increase from 6.17 in the $4/4$ to 8.5 in the $1/4$ degree Indian blood group. Therefore more high and fewer low scores are found in the blood groups as the degree of Indian blood decreases.

These data show that success on Test 5 of the Terman Test increases as degree of Indian blood decreases.

TABLE 14

SCORES OF TEST 6-SENTENCE MEANING-BY DEGREE OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	19	22	20	24
Median	7.8	7.95	9.33	10.11
Low	0	0	0	0
Number	169	125	144	181

Table 14 shows the range and median scores of each blood group on Test 6, Sentence Meaning, of the Terman Test. The highest possible score is 24.

Only two cases made the highest possible score, 24, and they were in the $1/4$ degree Indian blood group. The next highest score, 22, was made by one case in the $3/4$ degree Indian blood group. Two cases in the $1/2$ degree Indian blood group made high scores of 20. The highest

score, 19, of the 4/4 degree Indian blood group was made by one case.

Eight of the 4/4, four of the 3/4, eight of the 1/2, and two of the 1/4 degree Indian blood group scored 0.

The median scores show a steady rise from 7.8 in the 4/4 to 10.11 in the 1/4 degree Indian blood group. These figures show that there is a larger proportion of high and a smaller proportion of low scores as the degree of Indian blood decreases.

Success on Test 6 of the Terman Test increases as the degree of Indian blood decreases.

TABLE 15

SCORES OF TEST 7--ANALOGIES--BY DEGREE OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4
High	20	19	20	20
Median	9.975	10.54	12	13.77
Low	3	2	3	3
Number	169	125	144	181

Table 15 shows the range and median scores of each blood group on Test 7, Analogies, of the Terman Test. The highest possible score is 20.

Four in the 4/4, one in the 1/2, and two in the 1/4 degree Indian blood group made the highest possible score, 20. The highest score of the 3/4 degree Indian blood group was made by five cases.

Six cases in the $4/4$, one case in the $1/2$, and one case in the $1/4$ degree Indian blood group made low scores of 3. One case in the $3/4$ degree Indian blood group made the low score, 2.

The median scores rise steadily with each blood group from 9.975 in the $4/4$ to 13.77 in the $1/4$ degree Indian blood group, showing a larger proportion of high and smaller proportion of low scores as the degree of Indian blood decreases.

Success on Test 7, Analogies, of the Terman Test increases as degree of Indian blood decreases.

TABLE 16

SCORES OF TEST 8-MIXED SENTENCES-BY DEGREES OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	18	16	17	18
Median	6.21	6.3	7.7	6.98
Low	0	0	0	0
Number	169	125	144	181

Table 16 shows the range and median scores of each blood group on Test 8, Mixed Sentences, of the Terman Test. The highest possible score is 18.

One in the $4/4$ and three in the $1/4$ degree Indian blood group made the highest possible score, 18. The next highest score, 17, was made by two cases in the $1/2$ degree Indian blood group. The highest score of the $3/4$ degree Indian blood group was 16 and was made by one case.

Twenty-six in the $4/4$, twenty-five in the $3/4$, eighteen in the $1/2$, and twenty in the $1/4$ degree Indian blood group scored 0.

The median scores rise with decrease of Indian blood from 6.21 in the $4/4$ to 7.7 in the $1/2$ degree Indian blood group. The median of the $1/4$ degree Indian blood group, however, drops to 6.98, which is larger than the median of the $3/4$ and smaller than the median of the $1/2$ degree Indian blood group.

There is a slight, but neither consistent nor dependable, tendency for success on Test 8 of the Terman Test to increase as degree of Indian blood decreases.

TABLE 17

SCORES OF TEST 9--CLASSIFICATION--BY DEGREE OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	18	17	18	18
Median	13.24	13.15	13.68	13.65
Low	5	1	3	1
Number	169	125	144	181

Table 17 shows the range and median scores of each blood group on Test 9, Classification, of the Terman Test. The highest possible score is 18.

Three in the $4/4$, three in the $1/2$, and one in the $1/4$ degree Indian blood group made the highest possible score, 18. The highest score of the $3/4$ degree Indian blood group, 17, was made by six cases.

No case in the entire group scored 0 on this test. One case in the $1/4$ and one in the $3/4$ degree Indian blood group made the low score of 1. The lowest score of the $1/2$ degree Indian blood group was 3 and was made by one case. The lowest score of the $4/4$ degree Indian blood group was 5 and was made by one case.

The lowest median score on this test is found in the $3/4$ degree Indian blood group; it is 13.15. The next highest median score is 13.24, the median of the $4/4$ degree Indian blood group. The $1/4$ degree Indian blood group ranks next with a median of 13.65. The highest median, 13.68, is found in the $1/2$ degree Indian blood group. It may be noticed that the range of the medians is only .53 points; therefore the differences in medians are not reliable.

The scores of Test 9 of the Terman Test do not show any influence of degree of Indian blood upon success in the test.

TABLE 18

SCORES OF TEST 10-NUMBER SERIES-BY DEGREE OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$
High	24	22	24	24
Median	10.3	10.5	12.6	14.07
Low	0	0	0	0
Number	169	125	144	181

Table 18 shows the range and median scores of each blood group on Test 10, Number Series, of the Terman Test. The highest possible score is 24.

Two cases of the $4/4$, one of the $1/2$, and four of the $1/4$ degree Indian blood group made the highest possible score, 24. The highest score of the $3/4$ degree Indian blood group was 22; it was made by two cases.

Eleven of the $4/4$, nine of the $3/4$, four of the $1/2$, and six of the $1/4$ degree Indian blood group scored 0.

The median scores rise steadily from 10.5 in the $4/4$ to 14.07 in the $1/4$ degree Indian blood group, showing that there are more high and fewer low scores in each blood group as the degree of Indian blood decreases.

Success on Test 10 of the Terman Test increases as degree of Indian blood decreases.

TABLE 19

MEDIAN SCORES OF SEPARATE TESTS OF TERMAN TEST BY DEGREE OF INDIAN BLOOD

Group	$4/4$	$3/4$	$1/2$	$1/4$	Diff. between $4/4$ & $1/4$
Test					
1	11.96	12.8	13.5	13.96	2.
2	16.35	16.42	18.5	17.8	2.15
3	6.47	6.75	9.0	10.28	3.81
4	8.98	9.1	11.4	11.8	2.82
5	6.17	6.4	6.7	8.5	2.1
6	7.8	7.95	9.33	10.11	2.31
8	6.215	10.54	12.	13.77	3.795
9	13.24	6.3	7.7	6.98	1.49
10	10.5	13.15	13.68	13.65	.53
		10.5	12.6	14.07	3.77

Table 19 shows the median score of each of the ten tests of the Terman Test and the difference between the

lowest and the highest median score on each test.

All of the tests with the exception of Tests 2, 8, and 9 show a rise in median score with each blood group as the degree of Indian blood decreases. The greatest differences between lowest and highest medians are found in Test 3 (Word Meaning), Test 5 (Arithmetic), and Test 10 (Number Series). The differences in median scores in these three tests are 3.81, 3.8, and 3.77 respectively.

Test 9, Classification, shows the most uniform median scores, the difference between highest and lowest scores being .53.

In Tests 2, 8, and 9 it may be seen that the median scores of the $1/4$ degree Indian blood group fall below the median scores of the $1/2$ and above the median scores of the $3/4$ and $4/4$ degree Indian blood groups.

Tests 2 and 8 show a slight tendency for success to increase as degree of Indian blood decreases. Tests 1, 3, 4, 5, 6, 7, and 10 show a more decided tendency for success to increase as degree of Indian blood decreases. No difference in the success of the four blood groups is shown in Test 9.

B. Comparison of Principal Tribes.

TABLE 20

SUMMARY OF CHRONOLOGICAL AGES FOR EACH PRINCIPAL TRIBE

	Oldest	Median Age	Youngest	No. Cases
Cherokee	23 yrs.	19 yrs.	14 yrs.	105
Chippewa	23 "	18 "	15.5 "	62
Chickasaw	20 "	18 "	13 "	15
Choctaw	22.6 "	19 "	14 "	54
Creek	22.6 "	19 "	15 "	30
Sioux	23 "	19 "	13.5 "	52
Ottawa	22.6 "	19 "	13.5 "	21
Pottawatomie	22 "	18 "	14 "	16
Sac & Fox	25 "	19 "	16.5 "	17

Table 20 shows the range and median chronological age of each of the principal tribes studied. It may be seen from the table that the median chronological age of each tribe is either 18 or 19 years. Chronological age, therefore, could have no measurable effect upon any differences in measures of mental ability found in studying these tribes.

It may be seen also that the Sac & Fox, Pottawatomie, Chickasaw, and Ottawa tribes are represented by so few cases that a fair and reliable comparison cannot be made between these tribes and those represented by a large number of cases.

TABLE 21

DISTRIBUTION OF CASES IN EACH OF PRINCIPAL TRIBES BY DEGREE
OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4	Below 1/4	Med. Degree
Cherokee	23	21	19	39	3	9/16
Chippewa	4	10	19	28	1	1/2
Chickasaw	1	1	6	7		1/2
Choctaw	14	6	16	18		1/16
Creek	9	9	4	8		3/4
Sioux	11	6	14	20	1	1/2
Ottawa	10	6	1	4		15/16
Pottawatomie	1	7	3	5		11/16
Sac & Fox	9	3	4	1		15/16

Table 21 shows the distribution by degree of Indian blood and the median degree of Indian blood of each of the principal tribes represented in this study.

It may be observed that the median degree of Indian blood varies in amount from 1/2 in the Chippewa, Chickasaw, and Sioux tribes to 15/16 degrees of Indian blood in the Ottawa and the Sac & Fox tribes.

The degree of Indian blood of these tribes varies so much that any data regarding the mental ability of these tribes are only suggestive.

TABLE 22

SUMMARY OF MENTAL AGES OF PRINCIPAL TRIBES

	High	Median	Low	Range
Cherokee	216	167	138	78
Chippewa	210	178	138	72
Chickasaw	192	178	150	42
Choctaw	210	171	120	90
Creek	204	170	132	72
Sioux	210	172	132	78
Ottawa	210	181	150	60
Pottawatomie	216	177	144	72
Sac & Fox	204	171	150	54

Table 22 shows the range and median Mental Age of each of the principal tribes.

The greatest range, 90, is found in the Choctaw tribe, showing that the mental ages of the subjects of this tribe are more variable than the mental ages of the subjects of any other tribe in this group of tribes.

The smallest range is found in the scores of the Chickasaw tribe, indicating that the mental ages of that tribe are less variable than the mental ages of any of the other tribes in this group.

The highest median mental age, 181, was made by the Ottawa tribe. The second highest median mental age, 178, was made by both the Chippewa and the Chickasaw tribes. Third in rank is the Pottawatomie tribe with a median mental age of 177.

The lowest median mental age, 167, was made by the Cherokee tribe.

The Choctaw and the Sac & Fox tribes have the same median mental age, 171. The Creek tribe is one point below with a median mental age of 170, and the Sioux tribe is one point above with a median mental age of 172.

There is a difference of 14 points between the lowest and the highest median mental ages. Because this difference is so small and because several tribes have the same or nearly the same median mental age, we cannot consider the data significant enough to draw final conclusions in regard to the mental ages of these tribes, but they indicate that there is no significant difference between the mental abilities of these tribes.

TABLE 23

SUMMARY OF I.Q.'S OF PRINCIPAL TRIBES

	High	Median	Low	Range
Cherokee	115	89	70	45
Chippewa	110	94	70	40
Chickasaw	105	94	75	30
Choctaw	115	90	60	55
Creek	105	88	65	40
Sioux	110	92	70	40
Ottawa	110	94	80	30
Pottawatomie	110	93	80	30
Sac & Fox	105	89	75	30

Table 23 shows the range and median I. Q., measured by the Terman Test of each of the principal tribes used in this

study.

The greatest range, 55, is found in the Choctaw tribe, showing that the I. Q.'s of the members of this tribe are more variable than the I. Q.'s of the members of any other of the principal tribes.

The smallest range, 30, is found in the Chickasaw, Ottawa, Pottawatomie, and Sac & Fox tribes, showing that the I. Q.'s of these tribes are less variable than the I. Q.'s of the other tribes in this group.

The highest median I. Q., 94, is found in the Chippewa, Chickasaw, and Ottawa tribes. The lowest median I. Q., 88, is found in the Creek tribe.

The range of I. Q.'s is only 6 points--from 88 to 94. This small difference and the fact that the number of cases representing each tribe and the variability in degree of Indian blood of the representatives of each tribe make it impossible to draw any definite conclusions regarding the relative I. Q.'s of these tribes. We can say only that so far as these data are concerned, there is apparently very little difference in the I. Q.'s of these tribes.

CHAPTER IV

SUMMARY AND CONCLUSIONS

1. The chronological ages of the 625 Indians tested vary so little that physical maturity can have no measurable effect upon the mental ability of these Indians as far as the interpretation of these data is concerned.

2. There is a slight tendency for M. A. to increase as degree of Indian blood decreases.

3. There is a tendency for I. Q. to increase as degree of Indian blood decreases.

4. There may be a slight tendency for I. Q. to increase with length of time spent in school, but the data of this study are not sufficient to justify any final conclusions in regard to the matter.

5. There is a slight tendency for school marks to increase as degree of Indian blood decreases.

6. These data do not indicate a tendency for length of time spent in school to affect school marks.

7. The total scores of the Terman Group Test of Mental Ability indicate a tendency for scores to increase as degree of Indian blood decreases.

8. Test 9 of the Terman Test shows almost no tendency for score to increase as degree of Indian blood decreases.

9. Tests 3, 5, and 10 show a greater rise than do the other tests of the Terman Test as the degree of Indian blood decreases.

10. From the data used in this study there is very little indication of difference in the mental ability of the nine principal tribes.

11. There appears to be a small but positive tendency for mental ability as measured by the Terman Group Test of Mental Ability to increase as degree of Indian blood decreases.

12. White children make higher scores on the Terman Test than do Indian children of the same grade.

13. These data show some difference between mental ability of the Indian and the white races. Goodenough, Hunter, and Somermier have presented data which show that the mental ability of the white race is superior to that of the Indian race, and these authorities believe the difference to be racial.

14. Frequently, however, we find an emotional bias one way or another. For example, Garth attempts to attribute a great deal of the difference between races to nurture, or environment, and Ellis firmly believes that environment cannot account for all the difference.

15. If the tests are regarded as measures of the ability to see relationships, (g) as Spearman conceives it, there is no more reason to be emotionally exercised about it than about skin color.

16. If we accept the tests used in this study and those used in the studies reviewed in this paper as measures of general intelligence, it is plausible to interpret the data as indicating differences too great to be explained by environmental influences.

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APPENDIX

COMPLETE TABLE OF I. Q.'S BY DEGREE OF INDIAN BLOOD

Group	$\frac{4}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$
115			1	2
110	3	1	1	9
105	9	3	15	22
100	14	12	20	29
95	20	16	19	40
90	17	21	34	20
85	38	25	24	28
80	41	36	21	19
75	17	6	5	11
70	7	5	4	1
65	2			
60	1			
Number	169	125	144	181

COMPLETE TABLE OF MENTAL AGES BY DEGREE OF INDIAN BLOOD

Group	$\frac{4}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$
216	2			5
210	1	1	2	5
204	7	2	9	14
198	10	5	10	16
192	6	6	13	16
186	11	7	12	21
180	10	13	17	21
174	11	12	17	15
168	19	19	22	18
162	23	13	10	16
156	33	27	17	16
150	18	8	9	15
144	8	7	2	2
138	5	5	4	
132	3			1
126	1			
120	1			
Number	169	125	144	181

COMPLETE TABLE OF TOTAL SCORES ON TERMAN TEST BY DEGREE
OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4
185				2
180	2			2
175	1	1	1	3
170			1	1
165	2	1	3	3
160	1	1	2	4
155	3		5	8
150	6	2	6	5
145	5	4	2	11
140	1	2	8	7
135	5	4	6	9
130	3	4	4	11
125	8	1	6	11
120	8	7	6	9
115	2	5	11	7
110	4	4	6	14
105	7	7	10	6
100	3	9	10	5
95	7	11	9	6
90	16	11	7	9
85	13	6	5	10
80	8	10	8	12
75	10	9	6	6
70	19	5	6	4
65	9	9	6	3
60	7		3	9
55	8	1	3	2
50	2	5		1
45	3	3	3	
40	3	3	1	1
35	1			
30	1			
25	1			
Number	169	125	144	181

COMPLETE TABLE OF GRADES BY DEGREE OF INDIAN BLOOD

Group	4/4	3/4	1/2	1/4
7	0	0	0	0
6.5	2			3
6	1	1	3	1
5.5		4	2	6
5	3	5	7	11
4.5	6	12	9	20
4	9	12	18	22
3.5	21	11	10	27
3	37	23	32	34
2.5	44	32	28	29
2	35	16	20	20
1.5	7	5	8	5
1	2	3	2	1
N	167	124	139	179